

COMPOSITE FUSELAGE CRASH FE MODELLING DEDICATED TO ENHANCE THE DESIGN IN CORRELATION WITH FULL SCALE DROP TEST

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Key words: Crash, Aircraft Design, Finite Element Modeling, Composite Structures.

Abstract. This paper deals with the technical achievements done by EADS Airbus SA during the European framework 4 CRASURV study linked to the corresponding tests performed by CEAT. The major technical achievements are regarding the design and the sizing of an aircraft composite fuselage structure, with the objective to include specific parts dedicated to energy absorption, in order to obtain a satisfactory behavior in a typical crash scenario. This paper first deals with the design orientations defined at the beginning of the study, explaining the basic ideas justifying the chosen concept. Then the sizing approach is presented, starting with the material law calibration and next with the FE modeling of the composite absorbers. The third step is dealing with the airliner sub cargo floor structure sizing and the exploitation of the drop test results. At the end, the design and sizing of the airliner fuselage section are presented based on pre test simulations before dealing with the final drop test results and the corresponding post test simulations. The conclusion is dealing with recommendations for composite fuselage design and sizing under crash scenarios, considering specific test aspects.